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AFRL and Univ. of New Mexico join forces

by J. Rich Garcia, Directed Energy Directorate

KIRTLAND AIR FORCE BASE, N.M. — Improving chemical lasers is just one of the expected outcomes from a collaboration between the University of New Mexico and the Air Force Research Laboratory.

Providing research opportunities for graduate students and developing a pipeline for future laser scientists are other outcomes expected from a three-year Cooperative Research and Development Agreement that was signed Dec. 9 by the laboratory's Directed Energy Directorate and the Albuquerque-based university.

Research will be performed at the directorate's Chemical Laser Facility using directorate scientists working with university professors and graduate students. Their research will focus on how chemicals flow within a laser system and how those chemicals are mixed in subsonic and supersonic nozzles and interact with each other.

Chemical lasers include the Chemical Oxygen Iodine Laser and All Gas-Phase Iodine Laser. Both were invented by Directed Energy scientists. Also included are the Hydrogen Fluoride Laser, Deuterium Fluoride Laser and high-speed flow discharge lasers, all of which use the interaction of various chemicals to produce an action and/or reaction that generates laser light. Researchers will be observing, measuring and testing these chemical flows and their mixing, with results expected to improve the operation of all these lasers.

For this research, the directorate will be using some of its world-class capabilities, including a $250,000, one-of-a-kind planar laser-induced fluorescence – an instrument that looks at chemicals as they are combined. It is used to tell how well chemical mixing nozzles are working.

According to Dr. Gordon Hager, technical advisor for the directorate's Chemical Laser Branch and the individual overseeing this agreement, "We all gain from the arrangement. Not only does the technology advance but this opens the door for the university to gain additional federal research monies. It will also provide a training ground that will help turn students into future scientists in a technology area that doesn't often offer students this kind of an opportunity." @